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The New North Jersey: Why we need regional planning

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Abstract

Research will focus on the issue of regional planning for greenhouse gas reductions and climate change resiliency in the northern New Jersey region. This paper argues that sound regional planning can provide the guidance to ensure land use and transportation law significantly reduce carbon emissions and help societies prepare for stronger or more frequent extreme weather events through fair and equitable solutions. This paper will advance the case that as the federal government retreats from aiding planning programs in places like New Jersey, the state will need to develop new regional planning programs focusing on New Jersey issues. It will inspect the potential losses to resilient planning should the federal government cut its domestic spending, as is currently proposed, and search for potential policy solutions by analyzing plans from external institutions such as the Regional Plan Association (2017) and Together North Jersey (2015). The documents reviewed argue that the loss of federal aid may be irreplaceable due to the difficulties of cooperating across planning jurisdictions, such as towns, counties and states.

Introduction

Climate change presents two substantial problems for modern societies. The first is that they must reduce their carbon emissions from industry and daily life in order to mitigate further increases in the earth's temperature. The second is that because of the gradual rise in temperature which has already begun, societies will need to prepare their infrastructure and organization to be resilient against stronger storms, more extreme weather, and sea level rise. As the climate warms in this century, sea surface temperatures in the Atlantic will increase as well. And the warmer sea surfaces seem to encourage the formation of stronger hurricanes. Multiple studies of climate modeling scenarios showed that while warming seas might decrease the overall frequency of Caribbean hurricanes, it would drastically increase the number of Category 4 and 5 storms-- potentially by as much as 100 percent (Bender et al. 2010; Done et al. 2016). And this is happening in real time: one study using similar models suggested that a storm that dumped as much rain as Hurricane Harvey did will occur about 20 times more frequently by the end of the century (Kerry 2017).

This trend was manifested in the 2017 Atlantic hurricane season. The National Oceanic and Atmospheric Administration (NOAA) predicted the formation of 5-9 hurricanes, as opposed to an average (1981-2010) of 6. All told, however, the season saw 10 hurricanes, including Hurricane Maria, one of the most destructive in modern history. The 6.5 million residents of the thirteen-county North Jersey region (which spans Sussex County in the north to Ocean in the south and stops at Mercer on the west side) is almost certain to see more storms on the level of Hurricanes Irene and Sandy, and it will need to prepare for them. In addition to that, the region will need reduce its carbon dioxide emissions so as to mitigate the problem of global warming.

There are many possible solutions to climate change and resilience, but this paper will focus on how urban and regional planning can provide sound and equitable solutions. Plans can help guide an area's growth and development to minimize the amount of carbon emissions it will produce, and adapt its built form for extreme weather.

The problem for North Jersey is that it currently has little to no regional planning frameworks in place. The federal government has aided major efforts in the past, which will be discussed in greater detail below but under the current administration, regional planning assistance seems destined to subside. Existing programs were funded as part of relief packages after Hurricane Sandy, but the Federal government seems poised to slash funding for resilience and greenhouse gas reduction strategies. In the national government's stead, New Jersey will need to devise alternative sources of funding for planning programs or attempt to collaborate more closely with other states in the area. As this paper will demonstrate, however, capable and thorough institutions have already produced detailed and comprehensive plans for the region that consider climate change and resilience questions. The challenge will be to implement them with less help from the federal government than New Jersey has perhaps been accustomed to.

Land Use Planning and Sustainability

Land use planning and policy play an important role in sustainable development. Planning's interaction with the transportation, housing, agricultural, and environmental sectors places it in a focal point that determines how sustainable a community is. For the purposes of accessibility, this paper will briefly review how planning affects environmental sustainability, particularly greenhouse gas emissions and resiliency. Perhaps one of the most important tasks of sustainable urban planning is to ensure effective urban form. The term "urban form" describes a city's shape, density, and arrangement. Davoudi and Sturzaker (2017) consider the drivers of urban form,

which include “society, economy, governance, transport, and land; with each having a different level of influence at different global, national and local scales” (56). In the United States, most cities have grown into a sprawling and scarcely populated urban form. The built environment-- buildings, streets, and highways--tends to dominate the typically sprawling landscape. This affects carbon emissions in two important ways: it promotes single-occupancy automobile trips, as well as larger, detached, and less energy-efficient homes.

Davoudi and Sturzaker (2017) outline the former with a comparison of two cities, Atlanta, Georgia; and Barcelona, Spain. Both cities have populations of roughly 2.7 million, but Atlanta emits 100 million tons of carbon annually while Barcelona only emits 7 million (Davoudi and Sturzaker 2017, 56). Most research has found Atlanta’s much more sprawled urban fabric to be the cause, with many of its residents living too far removed from its public transit to take advantage of it. Urban form’s influence on a city’s transportation layout means it also influences that city’s carbon emissions. Urban form’s influence on carbon emissions stems from the multiple, intersecting impacts of living in either sprawling or dense areas. For example, residents of compact urban areas drive less and are better able to access alternative forms of transportation more than suburban residents, lowering their carbon footprint, but they also might choose to drive smaller, more fuel-efficient vehicles, further shrinking their footprint (Lee and Lee 2014, 541).

In their study of carbon emissions in the 125 largest U.S. urbanized areas, Lee and Lee (2014) note that mass transit can actually “generate more carbon emissions per person mile” when the vehicles operate at low capacity, “which is the case in many U.S. urbanized areas (UAs)” (539). That, however, means that in such areas (which constituted 91 out of the 125 UAs), increasing public transportation ridership has an even greater potential to reduce a

metropolis's carbon emissions. Indeed, on average, Lee and Lee calculated private transportation to emit 21,155 pounds of carbon, or 44.6 percent of total emissions from the housing sector. Overall, residential buildings and personal travel account for a combined 42 percent of U.S. carbon emissions. Lee and Lee's analysis revealed that population density exerts a clear effect on carbon emissions from vehicle miles traveled and the amount of electricity their houses need. When they measured for population-weighted density, or the density of the Census tracts where most people in the metropolitan area actually live, the predictor became even stronger.

Quantifying the reasons behind urban sprawl can be a complicated process. Davoudi and Sturzaker (2017) assess sprawl through their particular matrix, which they claim accounts for certain intangible influences on urban sprawl, such as what kind of lifestyle a country's society aspires to, as with English people and living in the countryside. The authors describe the United States as having "weak planning regulation and a social preference for living in the countryside" (58) which results in greater sprawl. One important note in their particular analysis of different European and American planning policies is that, all have failed because all have allowed urban sprawl to continue. They report one major reason for that in particular being a failure to educate the urban design professions and even more so, the general public, of the importance of compact development. Too many policies focused on laws and regulations without sufficient attempts to encourage investment and interest in denser lifestyles. Perhaps that flaw has marred planning efforts in the United States as well. In the 1950s, the federal government insured home loans in suburban communities and constructed a massive interstate toll-free highway network (Jackson 1985). The former policy was instituted to stimulate the economy while the latter was a national defense provision for fear of home invasion, but together these programs catalyzed a massive

urban exodus of white Americans to suburban communities. The history of planning in New Jersey will be discussed in more detail later in this paper.

Urban sprawl also affects the resiliency of New Jersey's communities. *Resiliency* describes a place's capacity to withstand and recover from major weather events such as hurricanes and floods, the more prominent dangers in New Jersey. A community's resilience against such weather events depends in part on its infrastructure and land uses. Wetlands, for example, naturally emerge in places which frequent flood, which means they can absorb storm surges (Tiner 1985, 89). Costanza et al. (2008) document this in their study of thirty-four major hurricanes that had struck the United States since 1980. They compared land coverage and wind velocity to the total damage done by a storm relative to a region's gross domestic product (GDP). Their findings show that while higher wind speeds predictably incur higher GDP losses, increases in coastal wetlands acreage decrease GDP loss. Regions with lower GDPs suffered fewer overall losses, but coastal wetlands still provided a consistent economic benefit as storm drains. In a wealthy state with increasingly scarce wetlands such as New Jersey, every large swath (defined by Costanza et al. as 1000 square kilometers of land) of wetlands saves a considerable amount of money in storm damage: roughly \$583 per hectare, or \$58,300 per kilometer.

Unfortunately, while research on the important role of wetlands in storm resiliency has been carried out for decades (Tiner 1985), it has been difficult to completely halt development in an area as densely populated as North Jersey. According to a joint study conducted by Rutgers and Rowan University using land use change data from the Department of Environmental Protection, New Jersey lost 22,946 hectares of wetlands between 1986 and 2012 (Lathrop, Bognar, and Hasse 2016, 2). Still, the state government has actively attempted to slow down

urbanization with the Wetlands Act of 1970 and the Coastal Area Facilities Review Act of 1973, and has seen meaningful success in that regard. Loss of wetlands decreased from roughly 1,214 hectares per year between 1986 and 1995 to 183 per year between 2007 and 2012, and more loss occurred in forested wetlands than coastal ones (7). While slowing the rate of wetlands loss is a victory for resilient planning, the fact remains that New Jersey's vulnerable coastal floodplains have been heavily developed. Furthermore, with the incredible revenue generated by tourism (\$44 billion in 2016 [Tourism Economics]), the Jersey Shore cannot be evacuated and abandoned so simply.

This is not to say that planners and public officials have failed to respond to disaster. Superstorm Sandy made the threats of climate change, particularly that of more frequent and more powerful storms, tangible for the leaders of the nation's largest metropolitan region. Different governments have, however, reacted in different ways. Hurricane Sandy rocked New York City, but its government had begun preparing for climate change impacts years before the storm. Then Mayor Michael Bloomberg organized the "First New York City Panel on Climate Change" in 2008 (Rosenzweig and Solecki 2014, 396), which laid out new regulation and policy options for preparing for stronger rains and flooding among other weather-related climate problems. The recommendations' key strength was that they followed a flexible approach that recognized that the threats of climate change may evolve with time. Rosenzweig and Solecki describe New York City's response to Sandy as robust and engaged as well.

In the wake of the storm, Mayor Bloomberg instituted a task force called the Special Initiative for Rebuilding and Resiliency (SIRR) to develop city policies that would minimize damage from future storms. SIRR has worked primarily on developing new flood maps and responses to those revised maps. In conjunction with the city's emphasis on flexibility, it has

created short-term plans that face less risk of becoming bogged down in red tape or being outpaced by climate change effects. The Jersey shore has not produced the same sophisticated response to the threats raised by sea level rise and stronger storms. As Rosenzweig and Solecki explain, federal funding for storm reparations and future climate preparedness arbitrarily distinguished New York City from New York State and New Jersey, when the more sensible plan would be for all three areas to receive combined funding for unified planning (403).

Regional Planning in New Jersey

Urban planners, designers, and public officials face a major task ahead of them in determining how to prepare the Jersey Shore for future storms. More importantly, they face a challenge that is regional, not local, in nature. The flooding from Sandy damaged virtually the entire Shore and communities fronting the Hudson River as well. Both Hudson County cities like Hoboken and Jersey City and Shore area destinations like Long Beach Island and Seaside Heights were severely flooded, with the latter being stripped of their boardwalks (Blake et al. 2013, 17). Mitigating the carbon emissions that have fueled that storm, and preparing for the next impact, will require multijurisdictional solutions. And that is not only because climate change is a global problem. Individual municipalities lack the resources necessary to address its complexities on their own. They face both economic and informational obstacles in acting alone against climate change.

New Jersey's state constitution entrusts its municipalities to provide multiple public services at their own expense. This reflects a long history of public services in New Jersey being predominantly funded by local taxes, a system that originated in the fifteenth century. The state legislature deliberated in adopting state income and sales taxes relative to other states. New Jersey finally passed a permanent sales tax in 1966, during the high tide of economic growth and

Lyndon Johnson's Great Society. A state income tax did not follow until 1976, largely mandated by the state Supreme Court after it found that school funding sources, so closely tied to local taxes, were unconstitutional. As late as 1989, "long after New Jersey imposed broad-based sales and income taxes, property taxes still accounted for 43 percent of state and local tax dollars, compared with a national average of 30 percent" (Salmore and Salmore 2008, 286). Since land use zoning became a municipal power in 1927, it has formed a major column of the state's home rule system, alongside education. This has resulted in municipalities being responsible for creating and managing land-use and development plans. In the past, New Jersey has developed statewide development plans, but the most recent one was completed in 2001, and there have been no talks to update it (New Jersey Department of State).

Because of the state's high degree of income inequality among its municipalities, few local governments can afford the sophisticated planning services needed to prepare for an event as monumental as climate change. New Jersey has a "highly fragmented system of local governance" (Lee, Im, and Choi 2013, 151) that has encouraged municipalities to compete for residents and businesses to furnish their own tax bases. Therefore, there is a financial barrier to not only local comprehensive planning, but regional as well. The tax structure dissuades municipalities from cooperating on regional issues because they are largely responsible for maintaining the funding for their own services. Municipalities have little motivation to follow a master plan that might prevent them from acquiring as many ratables (tax-paying entities) as possible. Furthermore, resiliency remains a novel planning approach, and many municipalities do not have the information and data needed to properly follow resiliency guidelines. As a result, most municipalities depend on external sources of information. The state government plays an

ostensible role here, but under the Christie Administration, its guidance on environmental issues diminished.

Thankfully, nonprofit networks, specifically Sustainable Jersey, have facilitated the sharing of sustainable practices in long-term planning). Sustainable Jersey is a nonprofit group whose membership currently consists of some 400 municipalities, including the state's largest, and guides and informs towns of how to plan more sustainably. Its website provides information on the many policies in outreach and hazard planning that Hoboken undertook with its consultation, including passing legislation to change its zoning regulations "to encourage sustainability through flood risk management" ("Sustainable Jersey Community Certification Report"). The recommendations made by Sustainable Jersey helped Hoboken modernize its planning and zoning ordinances for resilient growth whilst also fostering a stronger public commitment to sustainable development. (Stephen Marks, personal communication, January 5, 2018).

While Sustainable Jersey is an important conduit of information, it is also an entirely voluntary organization. Member towns and cities only follow their recommendations if they so choose, a decision which would logically come from popular demand. Sustainable planning in and of itself is not entirely a political liability. Hoboken's new mayor, Ravinder Bhalla, openly advocates for a diverse array of environmental policies on his official website ("Environment"). But public engagement in such programs is not equal across the board. Hoboken's population is younger, wealthier, and more educated than those of most New Jersey municipalities. The organic push for sustainability which has taken place there may not happen in every part of the state, and long-term resiliency planning may require rules and agendas that do not enjoy public support.

The pitfalls present in resiliency planning at the municipal level point to the necessity of coordinated regional planning. But regional planning in New Jersey is encumbered by its weak county governments. While New Jersey county planning departments possess the resources to prepare sustainability-oriented master plans, they lack the authority to enforce any recommendations they make. Legally, they can only issue such requirements for projects being built on county roads or near county drainage ditches. (Eric Timsak, personal communication, January 5th, 2018). Despite those limitations, county planning departments have successfully coordinated sustainability programs through innovative approaches. The Somerset County planning department exemplified this flexibility when it prepared its County Investment Framework in 2014. The CIF mapped out the entire county and designated certain areas to receive investment for new developments while designating others to be left as rural or wild areas.

It is an innovative smart growth strategy that utilizes geographic information systems (GIS) data in order to update the map if changes in the economy or population trends occur. The GIS technology also allowed the department to designate specific campuses and town sections for investment or limited growth. Ultimately, however, it would be the municipalities' choice to follow the recommendations, so the county planning department met individually with each town in order to verify that they agreed with the designations and make changes as needed. By doing so, the planning department ensured that although its zoning suggestions were purely voluntary, they had already secured approval from the municipalities that actually made the decisions. Furthermore, the CIF also provides municipalities the opportunity to request changes to the map if they see it necessary to do so (Somerset County Planning Board). By engaging municipalities and other important stakeholders throughout the development and post-development of the CIF,

the county planning department has adroitly cooperated with municipalities towards common goals. The problem lies in replicating this success in other county planning departments, or in encouraging sub-county or inter-county planning.

Federal Support

While New Jersey has no permanent regional planning framework in place, the federal government has provided support through both temporary and permanent programs. For decades, the Department of Transportation has funneled financial assistance for local infrastructure needs through metropolitan planning organizations (MPOs). They were created under the Federal Highway Act of 1962, which required any urbanized area with a population over 50,000 to have one. For this region, the North Jersey Transportation Planning Authority (NJTPA) operates as the MPO for the thirteen New Jersey counties occupying the New York metropolitan area. Its board of trustees is composed of the executives of each county, the mayors of Newark and Jersey City, and a few other representatives. The NJTPA does not implement any policies on its own. Instead, it counsels the municipal and county governments with planning research and can fund capital improvement projects with \$2 billion sourced from federal grants and matching funds from state agencies and the Port Authority of New York and New Jersey (NJTPA n.d., 12). Through the long-range transportation plan it must develop every five years, the NJTPA can use its funding to motivate local projects to reflect its preferences for those that, for example, encourage the use of mass transit or walking.

The NJTPA funds important road maintenance activities, but several more innovative resilience projects have emerged thanks to competitive federal grants. Some of the programs discussed involve a coalition of municipalities while others include a multi-county region. The first initiative is known as New Jersey Fostering Regional Adaptation through Municipal

Economic Scenarios (FRAMES). NJ FRAMES is a partnership between the New Jersey Department of Environmental Protection and a coalition of fifteen Monmouth County municipalities (known as the Two Rivers Council of Mayors) that are conducting long-term scenario studies into the consequences of flood and sea-level rise. The towns participating in the study include Republican as well as Democratic areas, and they surround the Navesink and Shrewsbury Rivers in addition to some lying along the Jersey Shore. They have likely experienced the destructiveness of more frequent hurricanes firsthand. Sandy caused tremendous flooding along the coasts, but Hurricane Irene bombarded New Jersey with heavy rain, which resulted in many rivers severely flooding; the Shrewsbury was one of multiple rivers whose stream gage recorded a new peak height (U.S. Geological Survey).

NJ FRAMES got its start thanks to National Oceanic and Atmospheric Administration's Office for Coastal Management. In 2015, the NOAA announced a new competitive grant for programs which would improve regional coastal resilience to storms, rising sea levels, and other threats related to climate change ("NOAA Announces \$9 Million in Grants" 2015). It awarded grants to states throughout the country, and in fiscal year 2015, New Jersey FRAMES received roughly \$900,000 to develop the FRAMES planning structure in addition to the \$450,000 it provided. The FRAMES project specifically met NOAA's preference to fund planning initiatives that incorporated climate change data. It uses scenario planning based on three different amounts of sea level rise, and includes an online asset mapper where citizens can designate any kind of place they find to be important to their community. FRAMES also utilizes a public-private partnership between state and municipal governments, higher education (through Rutgers University), and private business (through the Louis Berger company). FRAMES is still in its

early stages, but it promises to guide an especially vulnerable region towards better resiliency frameworks.

In addition to NJ FRAMES, the federal government has also made possible an ambitious and innovative storm resiliency project in Hoboken known as Rebuild by Design—Hudson (RBDH). RBDH is one of seven Rebuild by Design grants made possible thanks to the Disaster Relief Appropriations Act of 2013, which was passed in direct response to Superstorm Sandy. That law allocated \$3.85 billion for the Department of Housing and Urban Development to support relief and infrastructural improvements to areas damaged by Hurricane Sandy. HUD used these monies to finance competitive grants for projects such as RBDH, for which it provided \$230 million. With the New Jersey Department of Community Affairs administering that sum, the NJ DEP and the cities of Hoboken, Weehawken, and Jersey City will use it to complete the first of four phases of storm preparedness, which is the construction of a “Resist” flood barrier meant to protect portions of the three cities’ population from storm surges.

Providing funding for storm preparedness measures was a sound response by the government to Sandy’s impact, but the Disaster Relief Appropriations Act did not contain funding mechanisms for future projects. It is helping to remedy Hoboken, Weehawken, and Jersey City’s susceptibility to floods, but a pilot of the second, third, and fourth phases of the project will not be funded unless the Resist barrier can be constructed under budget. Those other phases—Delay, Store, and Discharge (DSD)—would mitigate the potential for rainwater flooding through the construction of green infrastructure such as rain gardens and bioswales (grass-covered drainage channels) and grey infrastructure such as storm pipes and water retention facilities. Currently there does not seem to be any clear source of funding for the DSD phases. Furthermore, while Rebuild by Design--Hudson will help protect a large part of the three

cities' communities from five-year floods, the project is remedial in nature. It was funded by an act which was only passed by Congress after Sandy had already slammed New Jersey.

Vulnerable communities in the state require proactive solutions that anticipate future storms. They also require similarly dramatic investments in plans to reduce our carbon emissions and help address the cause of this problem.

While Sandy and other major storms have spurred government responses, there have been other grant initiatives intended to support smart growth, not just disaster preparedness. The most significant example is *Together North Jersey* (2015), a plan targeting the North Jersey region that was developed by a broad coalition of nonprofit organizations, private companies, and public offices coordinated principally by the Edward J. Bloustein School for Planning and Public Policy at Rutgers University. It was launched by a \$5 million match from HUD's Sustainable Communities Regional Planning Grants in 2010, which was awarded to planning initiatives that could successfully weave its Six Livability Principles—increased transportation options, affordable housing, economic competitiveness, restricting urban sprawl, coordinating multiple levels of government, and “investing in healthy, safe, and walkable neighborhoods”—into nontraditional planning partnerships (Sustainable Communities). In order to guarantee the best possible public support for any plan they produced, the drafters of *Together North Jersey* sought extensive community and stakeholder input to use in the writing of a plan that addressed the HUD's preferences.

In three distinct phases of public outreach, the plan's sponsors gained the public's opinion on the current state of North Jersey, how it could improve, and the most promising options to achieve those improvements. The result was a plan that comprehensively addresses these requirements as well as environmental sustainability. It has focus areas in sectors ranging

from employee training and improving public education to investing in renewable energy and ensuring the region becomes resilient to future weather. Interestingly, the grant program which funded *Together North Jersey* was the result of another nontraditional coalition. Defunct since 2016, the Partnership for Sustainable Communities was formed between HUD, the Department of Transportation, and the Environmental Protection Agency in 2009 in order to “help communities nationwide improve access to affordable housing, increase transportation options, and lower transportation costs while protecting the environment”, and it was the main impetus behind the HUD’s grants (Partnership for Sustainable Communities).

All three of these initiatives meaningfully address resiliency for New Jersey’s most vulnerable communities using planning programs. They are all, however, products of temporary or expiring federal aid. While FRAMES promises much-needed resilience research, the Regional Coastal Resilience Grant series which funded it is among the multiple programs that will be cut in the current budget proposed for fiscal year 2019 (U.S. NOAA 2018). Rebuild by Design—Hudson was funded by a sum from an emergency appropriations bill, meaning it was a one-time opportunity for resiliency planners. The Partnership for Sustainable Communities had disbanded in 2016, but the Trump Administration has continued to slash funding to HUD. The fiscal year 2018 budget eliminated valuable grants such as the National Disaster Resilience Competition grants, which provided \$15 million of its \$925 million total treasure to New Jersey, to develop a comprehensive analysis of localized vulnerabilities to floods and storms, and plan countermeasures (“National Disaster Resilience Competition” 2016). The Department of Environmental Protection is currently preparing that money for use in competitive grants to assist communities in the resilience planning process; it will issue a request for proposals in spring of this year (Angarone 2018).

As part of a shrinking of HUD's budget, the administration also terminated the Community Development Block Grants for Disaster Recovery, which had previously aided reconstruction and redevelopment efforts for areas hit by hurricanes. New Jersey had received \$3.8 billion from HUD over three rounds of CDBG-DR funding in order to rebuild after Sandy, and render the shoreline more resilient. \$174 million went towards a home buyout program to help permanently relocate residents away from floodplains throughout eight counties (New Jersey Department of Community Affairs 2017). The FY 2018 budget completely defunded Sandy recover expenditures as well, which had totaled over \$5 billion the year before. The only surviving program which was mentioned here would be the long-standing funding for the NJTPA. In fact, the fiscal year 2018 budget slightly increased spending for MPO funding and the Surface Transportation Block Grant Program, which distributes transportation improvement funding to states (U.S. Office of Management and Budget 2017, 871). Overall, however, the federal government has begun constricting its support for planning and development in states like New Jersey, and funding for future projects may need to come from alternative sources.

The Fourth Regional Plan

As the federal government devolves more powers and planning responsibilities to the states, New Jersey will need to evaluate its ability to create long-term development strategies. Given the magnitude of climate change resilience planning, it might be better for the state to coordinate its response to climate change and resilience with other states. In doing so, it could follow the approach of the Regional Plan Association, one of the most well-known nonprofit planning advocacy groups in the New York area. Founded in 1929, the RPA develops policy recommendations for the entire Tristate Area to adopt. Its most recent major publication is its

Fourth Regional Plan (2017), which includes, among many topics, directives on revitalizing small cities, making housing more affordable, and reducing the area's environmental impacts.

Like *Together North Jersey*, the *Fourth Regional Plan* incorporated community feedback and voluminous research in order to support its suggestions. It differs, however, in the scope of its policy ideas. While *Together North Jersey* has a small number of environmental recommendations that call for support from Rutgers University or private industry, the *Fourth Regional Plan* more freely outlines more ambitious, less grounded solutions. For example, it advises that a new National Park be established in the Meadowlands for the purposes of resilience and education. National Park status would allow New Jersey to harness more money and legal protection to restore the Meadowlands' ecosystem, and would help educate the Americans about the importance of natural infrastructure for the human safety, such as wetlands (Regional Plan Association 2017, 178). *The Fourth Regional Plan* is a creatively written document, and its plans are not constrained by politics or strict pragmatism.

Such bold ideas, however, have their limitations. In the current political climate, support for adding land to the National Park Service is weak. The president has shrunk the territories of Bears Ears and Grand Staircase National Monuments (Turkewitz 2017) and, through the Bureau of Land Management, expedited the permit process for oil and gas drilling on public land while reducing the public comment period (U.S. Department of the Interior 2018). A new National Park would require enough Congressional support to pass through both houses, as well as overcome a potential presidential veto, and that does not seem likely. Another proposal is for the Army Corps of Engineers to conduct a cost and feasibility study into the creation of a vast sea wall that extends from Sandy Hook in New Jersey to the Rockaway Peninsula and an additional barrier on the East River, both on Long Island. While the RPA argues that the sea wall could

potentially protect important communities such as Manhattan from storm surges, even its report acknowledges that the barrier would disrupt ecosystems and possibly fail to prevent surges if sea levels rise too much (Regional Plan Association 2017, 182). The more interesting proposals the *Fourth Regional Plan* makes focus on cooperation between New York, New Jersey and Connecticut.

The barrier would depend on federal research and funding, but the *Fourth Regional Plan* also proposes establishing a Regional Coastal Commission that oversees risk assessment and preparations for counties threatened by sea level rise and coastal flooding in the three states. In the RPA's vision, the Regional Coastal Commission would balance the perspectives of urban centers like Hoboken and New York City, "suburban communities along the back bays and barrier beaches of Long Island and New Jersey, and the undeveloped land off Long Island's east end" (66). It would also integrate various sectors such as transportation management, health concerns, and environmental conservation to more completely steward the Tristate Area's vulnerable coasts. The proposal would at least avoid the need for federal support, but funding its scientific research and planning activity would require consistent funding from the three states. The RPA prepared an additional recommendation for this purpose: introducing climate adaptation trust funds in each state that would accrue capital from surcharges on property-casualty insurance premiums for lines that could include "homeowners, commercial, farm owners, fire, inland and ocean marine, boiler and machinery, earthquake, and private-crop products" that would last ten years (70).

According to the RPA's estimates, the surcharges would amass roughly \$27 billion to be directed towards better planning and infrastructure needs. The surcharge concept would face political hurdles, however: from the plan's description, it would target property owners in

threatened areas, which include New Jersey's most populous counties. If the state were to join such a commission either by referendum or law, many property and vehicle owners in flood-prone areas would oppose the surcharges, especially since the proposed surcharge is more expensive for New Jersey residents (\$15 per month for the average consumer) than for those in New York (\$5) or Connecticut (\$1). While boosters of a Regional Coastal Commission would need to grapple with opposition and points of contention, they do not need to blaze new trails. Regional commissions of this sort have past precedents in the Tristate Area and current examples in other parts of the country to follow.

In the past several decades, legal cooperation between states which form the Chesapeake Bay (Virginia, Maryland, and Pennsylvania) has evolved into a sophisticated array of programs and agreements. The state governments of Virginia and Maryland had previously worked together on bay management before agreeing to form the Chesapeake Bay Commission in 1980, which was then joined by Pennsylvania in 1983. The Commission acts as a policy advisor to each state's government on Chesapeake Bay issues. The Commission was soon joined by a different interstate technical support organization. During the 1970s, the Bay's economic and cultural importance prompted Congress to fund a study into the cause of extensive death among local fish and wildlife populations (Chesapeake Bay Program). That study implicated excessive nutrient population from farming operations, wastewater treatment plants, and lawn fertilizers, and led the states and the Commission to create the Chesapeake Bay Program in 1983.

The program carries out research and policy work that would likely function like the Regional Coast Commission, conducting water quality monitoring tests, modeling scenarios, and drafting watershed improvement plans for the municipalities. Like with the RPA's idea, however, funding for the Chesapeake Bay Program is a complicated matter. Multiple federal and

state agencies spend money on Bay restoration efforts, but because those expenditures do not all pass through one organization, “it can be difficult to quantify the extent of financial resources that support the entire Chesapeake Bay restoration effort”. Restoration efforts are funded at the federal level by a range of agencies, including the EPA and the Departments of Agriculture, Commerce, Defense, Homeland Security, and the Interior, for a total of \$569.2 million in fiscal year 2017 (Chesapeake Progress). The seven states in the Chesapeake Bay Watershed, which include New York, District of Columbia, New York, and West Virginia, invested \$1.41 billion in watershed restoration programs, which may or may not include the Chesapeake Bay’s. The Chesapeake Bay Program itself receives direct funding from the EPA (Chesapeake Bay Program), meaning a Regional Coastal Commission would likely depend on federal aid as well, without becoming a major investment for the three states.

While establishing an interstate planning commission presents fiscal difficulties, it does have a historical precedent in the Tristate Area, due to federal highway aid requirements. Under the Federal Highway Act of 1962, urbanized areas with populations of 50,000 or higher needed to prepare long-range plans guiding all transportation projects that would receive federal funding. To that end, each urbanized area established a metropolitan planning organization (MPO) to oversee the creation and evolution of a long-range transportation plan, and just a single MPO was designated for the New York metropolitan area in 1965. After gaining new planning responsibilities for housing, land use, and pollution in 1971, it took on its final name as the Tri-State Transportation Planning Commission (Horner 1981). Like other MPOs, the Commission developed long-range plans for its metropolitan planning area, which included New York City, Long Island, southern Connecticut, and North Jersey. As a conduit for federal highway money, it could finance projects so long as they were confirmed to meet the long-range vision by an

agency review. With its geographic range and population, the Commission administered funding for “multi-billion dollar projects” (Barron). An institution like the Commission would expedite many of the *Fourth Plan*’s recommendations, because it could incorporate them into its long-term plan.

Since 1982, however, the responsibilities of the Tri-State Planning Commission have been divided by state into three separate MPOs, still handsomely funded due to their large populations. The NJTPA alone oversees the allocation of more than \$2 billion in federal transportation aid each year for its thirteen-county jurisdiction (North Jersey Transportation Planning Authority). A combined MPO for New York and New Jersey or the Tristate Area would have ample resources to fund more ambitious projects. In 2016, his office’s planning department created a new position for a director of regional development. The regional director’s role in the city’s planning procedures is unclear, but other documents at least suggest a commitment to working with authorities in the greater New York region on issues like infrastructure. The city’s current master plan, *One New York* (stylized as *OneNYC*), specifically refers to hardening regional transportation and freight shipping against storms (The City of New York 2015, 240). Beyond that, references to regional planning are admittedly scant.

None of this is to say that the region’s MPOs do not actively communicate and coordinate with one another on planning issues. The NJTPA has had an extensive relationship with the NYMTC; after Superstorm Sandy, the two agencies collaborated with two Connecticut MPOs, the Federal Highway Administration, and the New Jersey, New York and Connecticut Departments of Transportation to prepare a post-Sandy transportation resilience study for the entire metropolitan region (NJTPA) (Z. Fields, L. Goldman, and J. Perlman, personal communication, January 10, 2018). The past existence of the Tri-State Regional Commission,

the New York City Department of City Planning, and the RPA's calls for a Regional Coastal Commission all invoke the potential benefits of a stronger, more unified regional planning framework, especially at a time when the federal government's role in infrastructure development has receded. Any attempt at regional governance, however, would have to manage to avoid the mistakes that led to the fracturing of the original Tri-State Commission.

The executive staffing of MPOs is a double-edged sword because they are mainly comprised of elected officials. The board of trustees of the NJTPA includes county freeholders, the mayors of Newark and Jersey City, state government officials, a delegate from the governor's office, and a citizen representative. This locally elected leadership structure makes it harder for federal administrations to influence a MPOs planning priorities, but it also means that the board of trustees and its executive committee all have additional offices which normally take precedent. The Tri-State Commission was plagued by absenteeism from all three states' representatives, who typically needed to oversee matters in their home districts (Horner 1981). Local planners questioned its fiscal responsibility, especially as the Commission produced reports on statistics they saw no use for at that time, such as how much trash the average area resident threw out each day (Barron 1982). It also sometimes failed to find adequate capital sources for its own plans, such as in 1975, when it claimed that "\$10.3 billion would be needed for what it called 'modest' expansion of highways and public transportation networks" but had only identified sources for \$6.4 billion of the total. Lastly, any kind of interstate commission would need to satisfactorily address the interests of its entire jurisdiction. This can be a difficult task when that jurisdiction varies in character from urban to suburban to rural.

The Tri-State Commission was ultimately disbanded when Connecticut's state legislature chose to permanently annul its yearly funding contribution in 1981. The state's population had

loathed the oversight of a regional authority in its planning schemes. The Tri-State Commission also had to contend with stalwart Republican representatives of suburban Nassau and Suffolk counties who opposed the Commission's mandate to build more affordable housing. In a sentiment shared by suburban counties in New Jersey, then Suffolk County executive Peter F. Cohalan remarked that the Commission prioritized improving urban areas while the suburbs "got grossly shortchanged" (Barron). Large portions of the Tristate Area remain suburban and conservative today. If a regional organization were to once again assume planning authority over resilience, mass transit, and other issues, it would need to somehow account for the prevailing differences in political character and development interests between suburban counties like Morris and urban ones like Hudson. Perhaps it could attempt Somerset County's approach of meeting one-on-one with the municipalities and county governments in its jurisdiction.

Creating a new regional commission might help fund critical resilience and transportation plans for New Jersey and the greater New York region, but it would be a politically daunting task. It might therefore be easier to follow a different recommendation from the *Fourth Regional Plan* and augment the powers of an existing interstate agency: the Port Authority of New York and New Jersey. The Port Authority operates many of the New York-New Jersey area's transportation hubs, including its largest airports; interstate bridges and tunnels; interstate bus terminals; marine shipping terminals; and the Port Authority Trans-Hudson train lines which run from Jersey City and Hoboken into Manhattan. The Port Authority also uses the revenue from these services to finance capital improvements for the region's infrastructure. While recognizing its importance as a funding source for transportation projects, the RPA derides the Port Authority as being marred by political squabbles between New Jersey and New York. New York and New Jersey have historically feuded over the Port's priorities, but this squabbling grew worse in 2007

when the states' governors agreed to let New Jersey's appoint the chairman of the board of trustees and New York's to appoint the executive director of the Port Authority. This leadership restructuring created two separate chief authorities "that often provide inconsistent direction to agency staff" (Knatz 2016, 75). The bickering that went on between states was indicative of a sense of competition for resources, not cooperation towards a greater goal.

The agency's functioning was further strained during the infamous "Bridge-gate" incident in 2013, when key officials in the Christie Administration ordered some lanes on the George Washington Bridge to be closed to punish the anti-Christie mayor of Fort Lee (Schuppe and Thompson 2017). The Port Authority commissioned a Special Panel to reform its leadership structure, but neither governor supported a requisite bill in their states' legislatures. Additionally, although the Port Authority uses its revenue to heavily subsidize necessary but unprofitable operations like the PATH service, the *Fourth Regional Plan* also finds it too willing to support these operations without attempting to raise their cost effectiveness. They find the agency to be overburdened with having to plan long-term infrastructural improvements as well as operating crowded transportation hubs.

To remedy the Port Authority's increasingly complicated mission, the *Fourth Regional Plan* advises a restructuring of its operation to become an infrastructure bank. The Congressional Budget Office (2012) describes an infrastructure bank as an entity which would use capital to finance select local projects based on certain criteria using "loans and loan guarantees" (2). Loaning the money rather than granting it would require any project to have a mechanism for raising revenue. This poses a problem for services which fail to break even, but the RPA argues that it would motivate those services to plan more efficient operations. More important than just the bank itself would be to separate the Port Authority's internal operations into departments

based on mission or service. Doing so would help open the door to private investment, and also encourage more distinct procedures and goals for staff overseeing daily services and staff overseeing infrastructure projects. Port Authority leadership could then negotiate with each division to set goals for how much money it should receive or contribute to subsidies and bond repayments. As for fixing infighting among the agency's leadership, as the *Fourth Regional Plan* points out, the Special Panel's recommendations can be implemented as soon as each state's governor campaigns for them. Because the issue could so quickly become embroiled in interstate politics, however, it may not likely be brought up any time soon.

Any attempt at regional partnerships must also manage not to fall victim to the historical imbalance in power between New York and New Jersey. New York City has long been the nation's most influential city in terms of financial and international importance. As such, it has tended to dominate other bi-state or interstate compacts. For example, the agency was originally known as the Port Authority of New York until 1972, when New Jersey governor William Cahill (1970-74) insisted it be changed to the Port Authority of New York *and New Jersey*. Under executive director Austin Tobin's thirty-year term from 1942 to 1972, the Port Authority's commissioners were typically bankers, and the agency discouraged either state's governor from meddling in its planning (Salmore and Salmore 2008, 269). The governors of both states complied with this request, but the agency frequently snubbed New Jersey's governors. They often petitioned leftover funds to be invested in mass transit projects, but "[c]ovenants in the authority's bonds, ostensibly to protect investors, permitted the commissioners to sidestep [these] requests" (269). Because of the authority's executive structure, New Jersey often lacked a seat at the table when it was supposed to be an equal partner in management.

The authority hesitantly agreed to finance construction of the PATH system, but only as part of a bargain to never fund another public transportation project. Governor Cahill was not just the individual who persuaded the authority to change its name; he was also the first New Jersey governor to “regularly threaten use of his veto power” (270). He was also first to ignore executive director Tobin’s demand to not appoint political allies to commissioner positions. Similar resentments over favoritism brought down the Tri-State Regional Planning Commission as well. Suburban conservative Connecticut was joined by suburban conservative New Jersey in protesting the Commission’s requirements for affordable housing and perceived preference for funding projects in New York and other cities.

Not all regional initiatives are limited to the Tristate Area, or the RPA’s proposals. The Regional Greenhouse Gas Initiative, officially launched in 2009, is a joint effort by nine states in the northeastern U.S. to create a cap-and-trade program for carbon emissions. By limiting states to emit only as much carbon as they purchased in allowances at auction, RGGI was intended to encourage participants to seek alternative forms of energy production that generate less carbon, whilst also using the proceeds from the auctions to fund those same efforts. New Jersey had been a member of RGGI until 2012, but governor Murphy signed an executive order that the state immediately rejoin the consortium (New Jersey Office of the Governor 2018). The effectiveness of RGGI in lowering carbon emissions is explored by Murray and Maniloff (2015), who compare carbon dioxide emissions from electricity generation with the RGGI states’ changing power production profiles and other exogenous factors. They find that that RGGI states actually decreased their emissions from electricity generation even more than the target figure (581).

While they do attribute part of this reduction to RGGI policies, the authors also note the importance of the 2007 recession and, even more so, the falling price of natural gas (a fuel which

emits about half the amount of carbon as coal [583]) as major contributors to the drop. Through hydraulic fracturing, natural gas became plentiful and thus inexpensive; perhaps in tandem with RGGI policies, this induced the member states to increase the share of natural gas in their electricity generation portfolio from 12 percent in 1990 to 40 percent in 2011 as coal's share decreased from 25 percent to 11. While RGGI's success depended on greater socioeconomic factors, the authors still consider it the largest overall cause behind the reductions in emissions, indicating that larger interstate compacts have the potential to properly function and accomplish their task.

Together North Jersey, and a Statewide Perspective

As a document that oversees the entire New York metropolitan area, the Fourth Regional Plan cannot provide the profound analysis of New Jersey planning issues that other plans, namely Together North Jersey, can. Together North Jersey's suggestions can guide regional planning efforts for environmental sustainability and resilience. They are much more specific than the RPA's sometimes-broadly worded directives. The main question, however, will be how to fund them and carry them out. The team behind Together North Jersey utilized a portion of its grant to create the Together North Jersey Institute, which held educational sessions for county and municipal officials on new best practices in planning throughout 2017. Together North Jersey also has another key advantage in that it partnered with the NJTPA in order to incorporate its transportation recommendations into the NJTPA's long-range plan, Plan 2045. All MPOs are required to draft long-range plans every five years that define their requirements for local projects to be funded.

By incorporating a component of Together North Jersey into its long-range plan, the NJTPA has ensured that a reliable stream of federal funding will support construction and education projects. As an example of this synergy, Together North Jersey calls for the broader implementation of complete streets policies in more North Jersey towns and counties. Complete streets policies set requirements for certain arterial roads to be designed to guarantee safe and convenient use for pedestrians and cyclists as well as cars. To promote complete streets, the plan recommends, among other things, educating stakeholders and training planners and officials on their benefits, and giving priority funding consideration to complete streets policies.

In turn, the NJTPA reflects this commitment to complete streets with its endorsement of projects to build bike lanes, pedestrian islands, and other road features that encourage diverse methods of transportation. It may be too early to determine how much this has impacted infrastructure upgrades in the region, but the NJTPA's planned transportation improvement program (TIP) for the 2017-2021 period show it will be spending an estimated \$18.8 million on constructing new pedestrian walkways, which is one component of complete streets (NJTPA 2017). The MPO's plan has less to say about resilience, but it does require projects built within regulated flood hazard zones to "take all reasonable measures necessary" to reduce their environmental impacts (Plan 2045 2017, App. E). Through improvements and repairs to bridges, drainage facilities, and vulnerable roadways, NJTPA will spend an estimated \$284 million in flood mitigation and resilience projects.

Ultimately, the NJTPA is limited in how it can help realize the vision of Together North Jersey to its mission to improve transportation. The challenge of implementing Together North Jersey's other recommendations for resilience and environmental sustainability will lie with New Jersey's state agencies and local offices. The plan made resilience to extreme weather one of its

top four priorities, and it drafted many initiatives that fall outside the purview of the NJTPA. Together North Jersey lays out numerous action frameworks for resilience, so just one will be examined here as a practice. The first and most fundamental step to resilience planning would be strategy 10.1: “identify[ing] the region’s vulnerabilities to extreme weather and climate change” (Together North Jersey 2015, 74). While Hurricanes Sandy and Irene revealed the susceptibilities of many communities to storms and flooding, the North Jersey region still needs to conduct a sweeping assessment of just how its different communities may be at risk from climate change impacts. Together North Jersey’s thorough and specific actions plans help make it easier to identify the simplest or most urgent steps to take, and who should take them. The action plans might be improved by including agencies that may be able to assist the offices which actually need to undertake them. For example, action 10.1.3 asks counties and municipalities to identify “communities of concern” which are vulnerable to climate change as well as lack of representation in the political process (“Action Plans”), and develop plans to include them in decision-making.

While the NJTPA cannot impel those governments to accomplish this task, it should be listed as a counsel for counties and municipalities unsure of where to begin. Through its longstanding partnership with the New York Metropolitan Transportation Council, the NJTPA could refer local governments to its counterpart’s more detailed plan on identifying communities of concern using Census data and outlining strategies for including them in the public involvement process (New York Metropolitan Transportation Council 2013). The NJTPA ought to act as a gateway to information on best practices in planning for local officials. Unfortunately, these plans do not offer estimations of the costs involved with each initiative. Action 10.1.2 asks local governments to “[c]onduct vulnerability and risk assessments of all communities” (“Action

Plans”). This is a considerable task for municipalities to handle. Many town governments in New Jersey do not have planning departments, only boards to approve projects (Jon Carnegie, personal communication, January 12, 2018). They do not proactively plan growth and development. They would not have the staff or, likely, the capital needed to determine their vulnerability to extreme weather.

While the state’s agencies do offer financial assistance for certain resilience activities, identifying risk does not seem to be one of them (New Jersey Governor’s Office of Recovery and Rebuilding). The number of suggested responsible parties may also complicate achievement of these actions. Action 10.1.8 calls for highlighting the importance of carrying out the aforementioned vulnerability assessments and accounting for them in long-term community master plans. It proposes that responsibility lay with the New Jersey DEP, Office of Emergency Management, Sustainable Jersey, the New Jersey chapter of the American Planning Association, and/or the New Jersey Association of Counties. Such a long list indicates how action steps like this one may defy simple delegation. Any one of these organizations could communicate the benefits of resilience mapping and planning to local governments, and perhaps they all should, but coordinating the public and private sector in this way seems infeasible.

While some of the plan’s initiatives may need further clarification, it has prepared instructions for a variety of actors to implement as well as a variety of ways to support implementation. Using the Together North Jersey website’s funding source database, a municipal or county planner can direct themselves to funding opportunities by focus area. Searching for resources for resilience initiatives reveals a small handful of opportunities provided by the DEP and the Department of Community Affairs. It is a straightforward method for connecting local officials with state aid that they may not have been familiar with, like the Environmental

Infrastructure Financing Program. Furthermore, the plan also lays out goals for various actors to work towards, even if they are not themselves members of the government. In action plan 10.1.10, Together North Jersey proposes that the DEP identify Brownfield sites that may cause cross-contamination if flooded. While the DEP operates a Brownfield Site Remediation Program, it does not currently have a framework in place for rating brownfields on their potential susceptibility to floods, meaning it could not proceed with Together North Jersey's action plan. But that may have to do more with the state law governing brownfield remediation. Specifically, the language of the New Jersey Brownfield and Contaminated Site Remediation Act of 1998 fails to mention "flood", "surge", "storm", or "resilience".

While it has been revised and amended since its passage, it is possible that the significance of larger floods to brownfields contamination has not yet been brought to the State legislature's attention. With this being the case, proponents of the *Together North Jersey* plan could lobby the DEP in order to consider responding to this problem, or they could lobby legislators to amend the BSCRA to reflect resilience concerns. *Together North Jersey's* varied solutions allow more stakeholders to become involved in the planning process. Here, too, however, the costs of such an initiative are not known. That lack of information will require another party, if not the DEP itself, to calculate the potential expenses associated with devising a system with which to judge brownfields' vulnerability to floods. In addition to missing certain planning details, Together North Jersey could be augmented by emulating federal initiatives. Looking at one of Together North Jersey's myriad action plans shows some limitations of the scope of the document. It identifies actions but cannot always determine how will they be funded or which group would be best fit to undertake them.

With a plan as broad as Together North Jersey, this is perhaps to be expected. And the plan is still the most robust and comprehensive resource for long-term planning that North Jersey currently has. Its recommendations should not be ignored. And one other important advantage that Together North Jersey possesses is the public-private partnerships it has strengthened in the region. The document affirms the central role of Rutgers University in regional planning efforts. The Bloustein School of Planning and Public Policy not only secured the grant which funded the plan, its faculty also collaborated with the NJTPA, the RPA, stakeholders, local government officials, and other private firms in drafting the document. The Bloustein School is also the only higher education institution in New Jersey to have a planning program accredited by the American Institute of Certified Planners, the only independent nationwide accreditation board for planning degrees. In other words, so long as the Bloustein School teaches its students about Together North Jersey and the significance of its recommendations, many of New Jersey's planners in the public and private fields will know about the plan and perhaps be more inclined to attempt its recommendations. Boosters of Together North Jersey and regional planning may also find more likely allies in the new Murphy Administration: two distinguished faculty members of the Bloustein School were named chair and co-chair of his transition team's transportation and infrastructure committee (Brodesser-Akner 2017).

Together North Jersey also demonstrates the importance of private partnerships to planning and resilience. Under the Murphy Administration, the state's budget for the 2019 fiscal year pledges to increase NJ Transit funding by \$242 million, which will benefit regional public transportation, but it does not mention enhanced spending on resilience. Furthermore, that budget faces challenges from state legislators for increasing taxation and state spending, meaning it may be modified before it can fund infrastructure investments (Asbury Park Press 2018). Nonprofit

organizations, philanthropic foundations, and corporate partners will form a necessary component of support for resilience and sustainability projects. Together North Jersey counted a number of planning advocacy nonprofits in its steering committee such as New Jersey Future, Housing and Development Community Network of New Jersey, and PlanSmart NJ. It also points to Sustainable Jersey as one of the most robust and helpful private partners working with municipalities on sustainability issues. Together North Jersey's funding database does not list any private donors for resilience planning, but it does include established organizations such as the National Fish and Wildlife Foundation and Public Service Enterprise Group as funding sources for land preservation and renewable energy programs, respectively. With the uncertainty looming over state and federal contributions to planning efforts, local governments and resilience advocates will need to increasingly turn to private organizations for support.

Comments and Conclusions

This paper does not claim to be definitive in its scope. Urban and regional planning is an incredibly broad practice, as shown by the range of topics covered by The Fourth Regional Plan and Together North Jersey. In choosing to specifically consider climate change and storm resilience, this research looked over other fundamental aspects of environmental planning, such as biodiversity, water quality, land preservation, and environmental justice. The first three topics could have been more thoroughly explored in a paper which, for example, focused only on resilience measures that involved so-called green infrastructure, which describes initiatives that increase the amount of vegetation in an area while also providing other benefits like storm water drainage. Environmental justice falls at the intersection of environmental and social issues and can sometimes be a wicked problem because sustainability initiatives can sometimes incur development and displacement in low-income communities. In general, planning should address

social problems like housing affordability, jobs creation, and public health, just as much as it should carbon emissions and vulnerability to storms. In discussing primarily sustainability and resilience, this research did not intend to imply that those other topics can be overlooked.

This research is also limited in its coverage of regional plans. It does not analyze all of the environmental initiatives described in neither The Fourth Regional Plan nor Together North Jersey. If the state was to attempt to update its state development plan, it could produce a tremendous change in how the state supports local and regional planning. Also, as mentioned earlier, this research does not delve into the important planning work being done by other planning nonprofits such as New Jersey Future, which might also contribute to ideas on how North Jersey can better prepare for climate change. This research also did not consider the many other avenues through which the federal and state governments support efforts to preserve open spaces and reduce emissions from electricity generation. Furthermore, this research looked at greenhouse gas emissions and resilience planning when both topics contain enough information to each occupy their own inquiries.

What this research was intended to do, then, was consider how impending changes in the federal government may impact planning in New Jersey—specifically North Jersey here—and leave communities less prepared to reduce carbon emissions or face down future storms. When presented at conferences, it should allow the uninitiated to understand the significance of the funding programs from HUD, NOAA, and other federal agencies that are swiftly being cut under the current administration. It also highlighted how several major federal aid programs were tied to Hurricane Sandy, which implies that past regional planning efforts only got their start after a superstorm had already heavily damaged much of North Jersey. That cannot continue to be the main motivation behind new plans and new infrastructure initiatives.

The North Jersey region needs to reduce its carbon emissions and adapt its communities to extreme weather before the next disaster strikes. But, as this research shows, efforts to do are severely hamstrung without a proactive federal government. New Jersey has used its agencies to support smart growth planning strategies, but the federal government has played a central role in many resilience projects. The state can and should look to its neighbors for more collective efforts to improve public transportation, further incentivize renewable energy, and prepare new resilience plans for the region. If and when another hurricane strikes the northeast, New York, New Jersey, and New England will all be impacted, and they need to consider how they might be better equipped to respond to the disaster if they develop some sort of joint task-force.

The most important step now for these questions are for the public to make them a priority. Voters, interest groups, and the news media in New Jersey need to carefully scrutinize what the Trump and Murphy administrations do about resilience planning. It will be the voting public who can sway New Jersey's Congress members to propose stronger support for planning from federal agencies. Likewise, it will be those same voters who communicate to the State Assembly that it needs to commence an update of its state plan, and perhaps explore ways of expanding its interstate compacts. Lawmakers have to be made aware of the importance of these issues. With documents like Together North Jersey and the Fourth Regional Plan, stakeholders and public actors have a roadmap to resilience, but they need to use those resources and champion them at every possible turn. It can be difficult to promote planning since it is, by nature, a long-term issue that may not seem as urgent as other immediate matters. But in this age of increasing uncertainty with the climate and the weather, and how that will impact lives in North Jersey, communities need to start having the conversations now.

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